




TCEQ Interoffice Memorandum

To: File

Thru: Jeff Thomas, P.E., P.G., Team Lead, Dam Safety Section 

From: Lisa Bishop, P.E.  Robert Calderon, P.E. 

Date: September 12, 2017

Subject: TX00037 – Lake Mark Dam
Polk County, Texas

TCEQ Dam Safety was notified by the owner (Indian Springs Lake Estates, Inc) that Lake Mark Dam sustained damages during the intense widespread rainfall from Hurricane/Tropical Storm Harvey. Hurricane Harvey made landfall on the Texas Gulf Coast on Friday, August 25, 2017 and produced heavy rains for 5 days with widespread flooding. The owner requested a site visit and assessment of the structure. Dam Safety staff visited the dam on September 12, 2017 to observe the dam and assess the storm damage.

TCEQ Staff was met at the dam by Tony Kelley (POA President), and Kimberly Hebert (POA representative). They shared their eyewitness accounts of the events.

The storm event produced approximately 30 inches of rain over a 5-day period. The steel-pipe drop-inlet spillway structure was engaged with approximately 2 feet of water. The morning after the storm started (Saturday morning) a sinkhole was observed on the crest in line with the drop-inlet spillway. The owner engaged a siphon to release additional flows from the lake. Lake levels rose but the dam did not overtop during the storm.

The dam was previously inspected by TCEQ Dam Safety on December 9, 2009 and was found in fair condition. Based on dam safety records, the height of the dam is 23 feet, the estimated normal capacity of the reservoir is 129 acre-feet and maximum capacity is 290 acre-feet.

The following observations of the storm damage were noted as shown in the attached photos.

- The drop-inlet spillway was engaged 1 inch over the spillway lip at the time of the inspection. (Photo 1)
- The sinkhole was observed on the downstream edge of the crest in line with the drop-inlet spillway. The sinkhole was approximately 11 feet in diameter and 5 feet

deep (Photos 2-4). The location of the sinkhole above the barrel pipe of the spillway suggests a failure in or around the pipe during the high flow conditions.

- No damages were observed at the outfall of the 3 feet diameter spillway outlet pipe (Photo 5-6).
- A depression of approximately 3 feet deep was observed on the crest near the right end of the dam (Photo 7). The owners discussed the option of improving this depression to serve as a spillway if they choose to cap the drop inlet spillway.

The dam is currently exempt from Dam Safety inspections and regulations. Per House Bill 2694 from the 82nd Texas Legislative Session, dams meeting the 5 criteria noted below are exempted from regulation through the Dam Safety Program. Those criteria are summarized as follows:

1. Dam is privately owned,
2. Dam has a maximum capacity of less than 500 acre-feet,
3. Dam has a hazard classification of low or significant,
4. Dam is located outside a city limit, and
5. Dam located in a county with population less than 350,000 as of 2010 census.

Based on these criteria, Lake Mark Dam meets the qualifications for exempt status. The dam owner is still required to maintain the dam in safe condition and the exempt status may be changed if downstream conditions change which would warrant an increase of the hazard classification to high. However, at this time, no further inspections of the dam will be scheduled through the Dam Safety program, unless requested by the owner or through a complaint.



Figure 1: Vicinity map

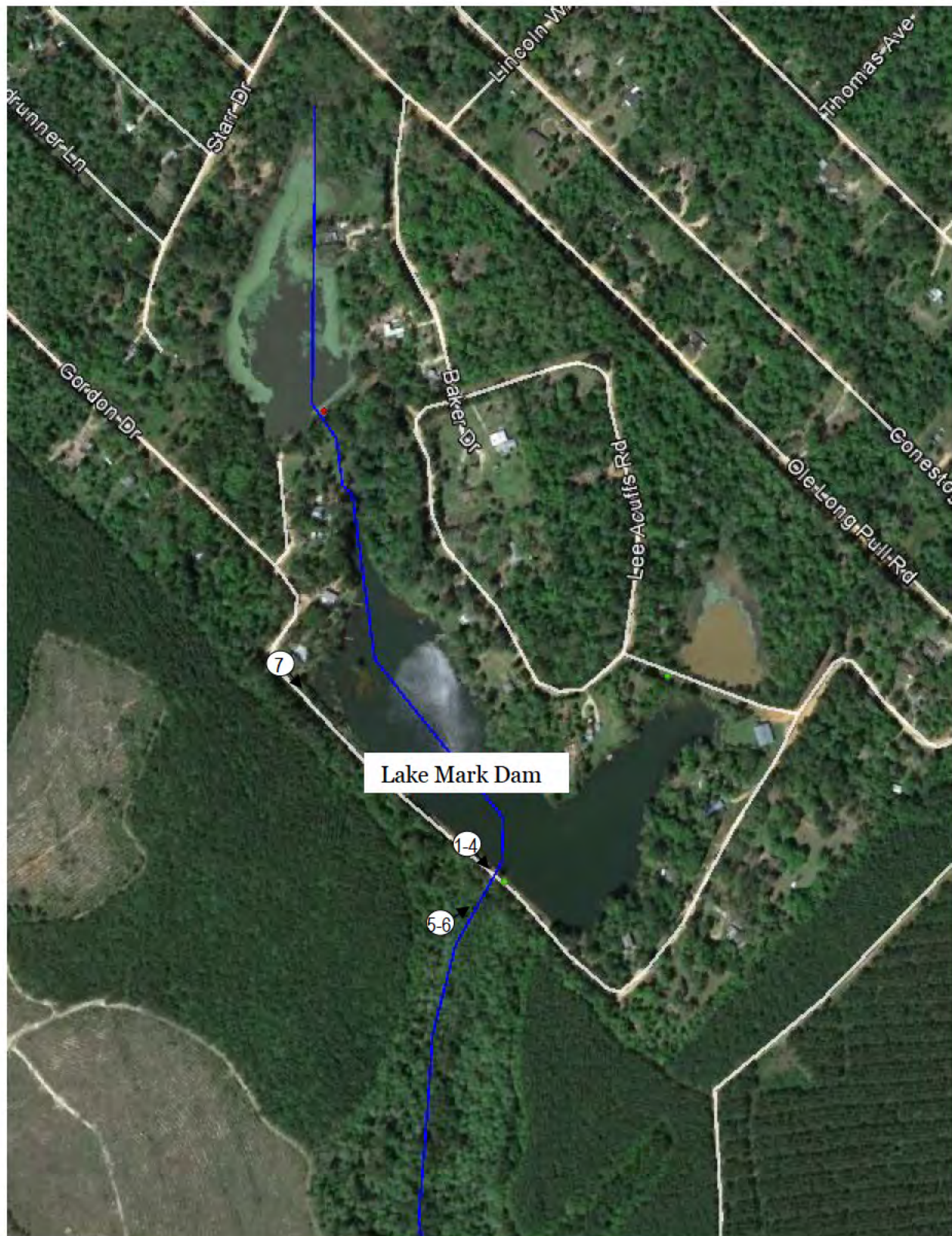


Figure 2: Aerial photo of the dam and surrounding area



Photo 1: The drop-inlet spillway was engaged 1 inch over the spillway lip at the time of the inspection.



Photo 2: The sinkhole was observed on the crest in line with the drop-inlet spillway.



Photo 3: The sinkhole was approximately 11 feet in diameter.



Photo 4: The sinkhole was approximately 5 feet deep.



Photo 5: Spillway outlet pipe was a 3 feet diameter smooth metal pipe.



Photo 6: View looking up the spillway outlet pipe.



Photo 7: Depression on the right end of the dam.